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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,165	06/20/2001	Cheng-I Hwang	P63539US1	5123

7590 10/06/2004

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EXAMINER	
TORRES, JUAN A	

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/884,165	HWANG ET AL.	
	Examiner	Art Unit	
	Juan A Torres	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

Figure 3b, 3c, 3d, 3e, 3f, 3g and 3i should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because figure 2a and figure 3a are cut in the right end and the two lines in the input-effect calculator doesn't connect the upper part of the drawing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement

Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: in page 10 line 5 in the equation the last term reads "k(n)" and should read "h(n)".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sau-Gee Chen ("A New Efficient LMS Adaptive Filtering Algorithm," IEEE Transactions on Circuits and Systems-II: Analog and Digital Signal Processing, Vol. 43, No. 5, pp. 372-378, May 1996), and further in view of Godard ("Self-Recovering Equalization and Carrier Tracking in Two-Dimensional Data Communication System," IEEE Transactions on Communications, Vol. 28, No. 11, pp. 1867-1875, November 1980). Sau-Gee Chen in the specification of the application (figures 2a-2e, page 9 line 12) and in "A New Efficient LMS Adaptive Filtering Algorithm," IEEE Transactions on Circuits and Systems-II: Analog and Digital Signal Processing, Vol. 43, No. 5, pp. 372-378, May 1996

(equations 1 to 6c) teaches a low complexity method of equalization employing a technique, capable of reducing or removing ISI from received signals to derive correct transmitted data; executing a convolver operation for convolution between equalizer inputs and equalizer coefficients by a decomposition technique which uses the coefficients and a coefficient-effect estimate supplied by a coefficient estimator operation (equations 1-6d); executing the coefficient estimator operation for updating of the coefficients and coefficient-effect estimate for use by the convolver operation at the next time instant (equation 6b and 6c, page 373); executing an error calculator operation for a value based on the current-time output of the convolver operation for use in coefficients adaptation and the coefficient-effect estimation (equation 13 page 374); executing an error scaler operation for the multiplication of output value of the error calculator operation by an adaptation step size (equations 6c and 6d); executing coefficient adapters operation for adjustment of the coefficients based on current and past equalizer inputs and the output of the error scaler operation (equation 8 and 9 page 374); and executing a coefficient-effect estimator operation for adjustment of the coefficient-effect estimate by a scaled value of the output of the error calculator operation (equation 5 page 373). Sau-Gee Chen doesn't teach the use of a blind equalizer. Godard in "Self-Recovering Equalization and Carrier Tracking in Two-Dimensional Data Communication System," IEEE Transactions on Communications, Vol. 28, No. 11, pp. 1867-1875, November 1980 and in the specification page 4 line 3, figures 1a-1d) teaches how to use a blind equalizer. The equalized describer by Sau-Gee Chen can be design with unknown training signals using the blind equalizer

described by Godard. It would have been obvious to one having ordinary skill in the art at the time the invention was made to accelerate the star-up of the system describer by Sau-Gee Chen, to use the blind equalizer described by Godard to obtaining the conversion of the equalizer.

Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sau-Gee Chen ("A New Efficient LMS Adaptive Filtering Algorithm," IEEE Transactions on Circuits and Systems-II: Analog and Digital Signal Processing, Vol. 43, No. 5, pp. 372-378, May 1996), in view of Godard ("Self-Recovering Equalization and Carrier Tracking in Two-Dimensional Data Communication System," IEEE Transactions on Communications, Vol. 28, No. 11, pp. 1867-1875, November 1980), and further in view of V. Weerackody ("A Simple Hard-Limited Adaptive for Blind Equalization", IEEE Trans. Circuits and System II: Analog and Digital Signal Processing, vol. 39, No. 7, Jul. 1992). Sau-Gee Chen and Godard teach claims 1 and 4. They don't teach the use of a sign technique. Weerackody in page 483 column 1 lines 42-49 teaches that one technique often employed is to incrementally adapt the filter in dependence upon whether the characteristic of the received signal is above or below the target value, without regard to how far the characteristic was above or below the target, that is, the sign (positive/negative) of the error measure, and not its magnitude, is used as the error function, this less precise approach also allows for less complex operations to define the error measure, the minimization processes which employ signs are termed signed minimization processes, or "hardlimiter" minimization processes. The technique described by Weerackody could be used in a blind equalized. It would have been

obvious to one having ordinary skill in the art at the time the invention was made to minimize the number of operations to use a sign technique when implementing the equalizer describer by Sau-Gee Chen for a training signal that is unknown.

Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sau-Gee Chen ("A New Efficient LMS Adaptive Filtering Algorithm," IEEE Transactions on Circuits and Systems-II: Analog and Digital Signal Processing, Vol. 43, No. 5, pp. 372-378, May 1996), in view of Godard ("Self-Recovering Equalization and Carrier Tracking in Two-Dimensional Data Communication System," IEEE Transactions on Communications, Vol. 28, No. 11, pp. 1867-1875, November 1980), and further in view of V. Weerackody ("A Simple Hard-Limited Adaptive for Blind Equalization", IEEE Trans. Circuits and System II: Analog and Digital Signal Processing, vol. 39, No. 7, Jul. 1992). Sau-Gee Chen, Godard and Weerackody teach claims 2 and 5. Godard, in the specification in the section of background of the invention page 6 line 1, shows how the block 105 performs an error scaler operation that in the case of the sign technique will output a positive or negative adaptation step size value depending on whether the output value of the blind error calculator is nonnegative or negative as explined in the sign technique by Weerackody. The equalized describer by Sau-Gee Chen using a sign technique could use the scaler described by Godard. It would have been obvious to one having ordinary skill in the art at the time the invention was made to spped-up the conversion of the equalizer to use a sign technique with an error scaler operation that outputs a positive or negative adaptation step size value depending on whether the output value of the blind error calculator is nonnegative or negative.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A Torres whose telephone number is (571) 222-3119. The examiner can normally be reached on M - TH 9:00 AM- 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H Ghayour can be reached on (571) 222-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAT JAT 9/30/2004

STEPHEN CHIN
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